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10/747,975

12/29/2003

Jorge L. Salcedo

TI-36516

9029

7590

01/13/2005

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EXAMINER

TANG, MINH NHUT

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/747,975

Applicant(s)

SALCEDO, JORGE L.

Examiner

Minh N. Tang

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935.C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 10 is/are allowed.
- 6) ☒ Claim(s) 1,3-7,11-13,15-17,19 and 20 is/are rejected.
- 7) ☒ Claim(s) 2,8,14 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/29/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on December 29, 2003 is considered by the examiner.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference number "100" (see Fig. 1 and Applicant's specification page 4, lines 21 and 26). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: reference number "518" in Fig. 4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply

to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "418" in Fig. 4 has been used to designate both "a power supply input (VCC)" (page 6, lines 29-30) and "a switching system" (page 6, line 14). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to because reference number "505" in Fig. 5 should be -- 504 --. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the

immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. The disclosure is objected to because of the following informalities:

a/ on page 4, "Q1" (line 29), and "Q2" (line 30) should be -- Q2 --, and -- Q1 --, respectively.

b/ on page 5, line 21, "400" should be -- 300 --.

c/ on page 7, line 7, ".for" should be -- for --.

Appropriate correction is required.

7. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

8. Claims 1, 7-8 and 11-13 are objected to because of the following informalities:

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a/ in claim 1, line 10, "the device" should be -- the IC device --.

b/ in claim 7, line 1, , "the device" should be -- the IC device --.

c/ in claim 8, "the device" (line 10), and "each input" (line 12) should be -- the IC device --, and -- each input pin --, respectively.

d/ in claim 11, "overvoltage source" (line 8 ), and "the power supply" (line 11) should be -- overvoltage pulse --, and -- the means for supplying a maximum supply voltage --, respectively.

e/ in claim 12, lines 3 and 5, "the power supply" should be -- the means for supplying a maximum supply voltage --.

f/ in claim 13, "the means for determining an increase in current from the power supply" (lines 1-2), and "the power supply" (lines 3 and 4) should be -- the means for determining a latch up conditioning --, and -- the means for supplying a maximum supply voltage --, respectively.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language:-

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10. Claims 1, 3-7, 11-13, 15-17 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Salcedo-Suner (U.S.P. 6,636,067)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claims 1 and 7, Salcedo-Suner discloses, in Figs. 4 and 5, a system for testing an integrated circuit (IC) device (500) having a power supply pin ( $V_{cc}$ ) and at least one input pin (508), comprising: a power supply (504) configured to supply a maximum voltage ( $V_{cc(max)}$ ); a current measuring device (512, 514) for measuring current between the power supply (504) and the IC device (500); and an overvoltage source (502) operative to apply an overvoltage pulse ( $V_{TRIGGER}$ ), wherein the overvoltage pulse ( $V_{TRIGGER}$ ) is applied to a test pin (506) of the at least one input pin (508) and the maximum supply voltage ( $V_{cc(max)}$ ) is applied to each other input pin of the at least one input pin (508), the current measuring device (512, 514) detecting whether a latch up condition exists by detecting an increase in current between the power supply (504) and the IC device (500) based on application of the overvoltage pulse ( $V_{TRIGGER}$ ).

As to claims 3 and 19, Salcedo-Suner discloses in column 4, lines 39-41, the current measuring device (512, 514) configured to detect a latch up condition by detecting a current increase of about at least 3 mA.

As to claim 4, Salcedo-Suner discloses in Fig. 4, the current measuring device (512, 514) further comprises a first current measuring device (514) for measuring current between the power supply (504) and the power supply pin ( $V_{cc}$ ); and a second current measuring device (512) for measuring current between the power supply (504) and the each other input pin of the at least one input pin (508).

As to claim 5, Salcedo-Suner discloses in Figs. 4 and 5, the current measuring device (512, 514) detecting a latch up condition by detecting an increase in current in at least one of the first current measuring device (514) and the second current measuring device (512) upon application of the overvoltage pulse ( $V_{TRIGGER}$ ).

As to claims 6 and 20, Salcedo-Suner discloses in Fig. 5, the overvoltage source (502) configured to supply an overvoltage pulse ( $V_{TRIGGER}$ ) with at least one of about a four nanosecond ramp time, about an eleven nanosecond pulse width, and about a four nanosecond drop time.

As to claims 11 and 15, Salcedo-Suner discloses, in Figs. 4 and 5, a system for testing a device (500), the device (500) comprising a power supply input ( $V_{cc}$ ) and a plurality of inputs (508), the system comprising: means (504) for supplying a maximum supply voltage ( $V_{cc(max)}$ ); means (512, 514) for measuring current from the means for supplying a maximum supply voltage (504) to the device (500), means (502) for generating an overvoltage pulse ( $V_{TRIGGER}$ ); means (see column 4, lines 24-31) for selecting a test input (506) by coupling a test input (506) of the plurality of inputs (508) to the means for generating an overvoltage pulse (502) and coupling each other input of the plurality of inputs (508) to the means for supplying (504); and means (i.e.,



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comparing) for determining a latch up conditioning by detecting an increase in current from the means for supplying a maximum supply voltage (504) upon application of the overvoltage pulse ( $V_{\text{TRIGGER}}$ ) to the test input (506).

As to claim 12, Salcedo-Suner discloses in Fig. 4, the means for measuring current (512, 514) further comprising means (514) for measuring current between the means for supplying a maximum supply voltage (504) and the power supply input ( $V_{\text{cc}}$ ); and means (512) for measuring current between the means for supplying a maximum supply voltage (504) and the each other input of the plurality of inputs (508).

As to claim 13, Salcedo-Suner discloses in Figs. 4 and 5, the means for determining a latch up conditioning detecting the increase from at least one of the means for measuring current (514) between the means for supplying a maximum supply voltage (504) and the power supply input ( $V_{\text{cc}}$ ), and the means (512) for measuring current between the means for supplying a maximum supply voltage (504) and the each other input of the plurality of inputs (508).

As to claim 16, Salcedo-Suner discloses in column 4, lines 29-39, the detecting a latch up condition further comprising: performing a first current measurement to the device (500) before applying the overvoltage pulse ( $V_{\text{TRIGGER}}$ ); performing a second current measurement to the device (500) after applying the overvoltage pulse ( $V_{\text{TRIGGER}}$ ); and comparing the first current measurement and the second current measurement to determine if a current increase to the IC device (500) has occurred.

As to claim 17, Salcedo-Suner discloses in column 4, lines 29-39, the detecting whether current to the IC device (500) increased upon applying the overvoltage pulse

(V<sub>TRIGGER</sub>) comprising detecting whether current increased from at least one of the current to the power supply input (V<sub>cc</sub>) and the current to the plurality of inputs (508).

***Allowable Subject Matter***

11. Claims 8-10 are allowed over the art of record.

It is noted that claim 8 should be amended to overcome the objection set forth above.

12. Claims 2, 14 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2, 8-10 recite, inter alia, a switching system configured for sequentially connecting each input pin to be tested to the overvoltage source while each other input pin is connected to the power supply.

Claim 14 recites, inter alia, the means for selecting a test input comprising sequentially selecting each of the other plurality of inputs for overvoltage testing.

Claim 18 recites, inter alia, sequentially selecting a new test input from the plurality of inputs for each of the plurality of inputs by coupling the test input to the maximum supply voltage, decoupling the new test input from the maximum supply voltage and applying an overvoltage pulse to the new test pin.

The art of record does not disclose the above limitations, nor would it be obvious to modify the art of record so as to include the above limitations.

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14. If rewritten claim 2 in independent form including all of the limitations of the base claim and any intervening claim, then claim 2 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 8. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

|       |           |   |
|-------|-----------|---|
| Gupta | 6,469,538 | Current Monitoring And Latchup Detection Circuit And Method Of Operation.                     |
| Watt  | 5,825,600 | Fast Turn-On Silicon Controlled Rectifier (SCR) For Electrostatic Discharge (ESD) Protection. |

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh N. Tang whose telephone number is (571) 272-1971. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R. Ramirez can be reached on (571) 272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**MINH NHUT TANG**  
**PRIMARY EXAMINER**

01/05/05